

REMARKS

Claims 1-53 are present in the application. Applicants would like to thank the Examiner for indicating that claims 22-53 are allowed and that claims 2, 4, 6-11 and 15-21 are allowable.

Claims 1, 3, 5 and 12-14 are rejected as unpatentable over YAMAZAKI et al. 6,489,632 in view of FUJIKAWA et al. 5,995,177 and further in view of KITAKADO et al. 6,461,899. This rejection is respectfully traversed.

Claim 1 provides gate electrodes of a TFT that have a first multi-level conductive structure and scan lines connected to the corresponding gate electrodes that have the first multi-level conductive structure. Claim 1 also provides that the first multi-level conductive structure includes a TiN film located at a top of the structure, an Al-based film located below the TiN film, and at least one Ti film located at at least one of an upper position and a lower position with respect to the Al-based film. Accordingly, claim 1 provides a three level structure including TiN, Al and Ti.

YAMAZAKI et al. at column 5, lines 19-25 teach a gate electrode 105 formed by using an anodizable material such as aluminum, tantalum and titanium or conductive metal nitrides such as tantalum nitride and titanium nitride. In the example given, tantalum only is used as the gate electrode. On column 8, lines 63-67 of YAMAZAKI et al. a multi-layer film of titanium nitride and aluminum is disclosed. Such a multi-layer film is a two

layer film, not a three layer film including titanium nitride, aluminum and titanium as recited in claim 1 of the present application.

FUJIKAWA et al. is offered for the teaching of a nitride layer having a nitride concentration of as high as 40% or more. FUJIKAWA et al. teach four metal layers. A first metal layer 20 is formed of tantalum, a second metal layer 21 is formed of tantalum nitride, a third metal layer 22 is formed of tantalum, and a fourth metal layer 23 is formed of tantalum nitride. Column 9, lines 58-60 disclose that titanium can be used in lieu of tantalum. However, FUJIKAWA et al. fail to teach or suggest a three-layer gate electrode including titanium nitride, aluminum and titanium. As disclosed on column 8, lines 10-15 of FUJIKAWA et al., for example, gate electrode 16 includes third metal layer 22 and fourth metal layer 23. Accordingly, FUJIKAWA et al. only teach a two layered gate electrode, not a three level structure that includes TiN, Al and Ti.

KITAKADO et al. at column 10, lines 46-63 teach forming a gate electrode from conducting layer "A" 111 and conducting layer "B" 112. Layer 111 can be for example titanium nitride and layer 112 can be tantalum, titanium, molybdenum or tungsten. KITAKADO et al. do not teach or suggest a three level electrode including titanium nitride, aluminum and titanium.

The above noted feature is missing from each of the references, is absent from the combination, and thus is not obvious to one having ordinary skill in the art.

At column 12, lines 54-61 of KITAKADO et al., for example, source and drain electrodes can be a three layer structure of titanium film, aluminum and titanium film formed in succession by sputtering. However, KITAKADO et al. does not teach or suggest a titanium nitride film located at at a top of the structure, and an aluminum based film located below the titanium nitride film and at least one titanium film located at least one of an upper position and a lower position with respect to the aluminum based film recited in claim 1 of the present application.

In addition, the above three layer film of KITAKADO et al. is with respect to the source and drain electrodes. KITAKADO et al. do not teach a three-layer gate electrode having the structure recited in claim 1 of the present application.

MPEP § 2143.03 states that "to establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art." *In re Royka*, 490 F.2d 981 180 USPQ 580 (CCPA 1974).

None of the cited references teaches a three-layer gate electrode structure. The only three-layer structure as taught by KITAKADO et al. is limited to source and drain electrodes. There is no teaching or suggestion that such three-layer structure

could be used for the gate electrode. And, in any event, KITAKADO et al. do not teach or suggest the exact recited elements of claim 1. Accordingly, *prima facie* obviousness has not been established and claim 1 is believed patentable over the cited prior art.

Claims 3 and 5 depend from claim 1 and further define the invention and are also believed patentable over the cited prior art.

Claim 12 provides source and drain electrodes having a first multi-level structure and signal lines connected to the corresponding source electrodes having the multi-level structure wherein the multi-level structure includes a titanium nitride film located at the top of the structure, an aluminum base film located below the titanium nitride film and at least one titanium film located at at least one of an upper position and a lower position with respect to the aluminum based film.

As set forth above, the closest reference to KITAKADO et al. teaches a three layer source and drain electrode. However, KITAKADO et al. do not teach or suggest that the three-layer structure includes titanium nitride located at the top of the structure and an aluminum based film located below the titanium nitride film and at at least one titanium film located at at least one of an upper position and a lower position with respect to the aluminum based film as recited in claim 12. Accordingly, claim 12 is also believed patentable over the cited

prior art. Claims 13-14 depend from claim 12 and further define the invention and are also believed patentable over the cited prior art.

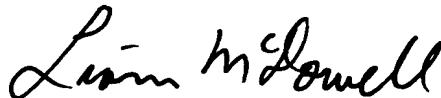
In view of the foregoing remarks, it is believed that the present application is in condition for allowance. Reconsideration and allowance are respectfully requested.

Should there be any matters that need to be resolved in the present application, the Examiner is respectfully requested to contact the undersigned at the telephone number listed below.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

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